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Before the

Federal Communications Commission

Washington, D.C. 20554

In the Matter of

Ohmart/VEGA Corp., REQUEST for WAIVER of Section 15.205(a) of the Commission's Rules to permit certification and immediate marketing of a Tank Level Probing Radar (TLPR) operating in the frequency band 77-81 GHz.

File No.________________

REQUEST FOR WAIVER

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REQUEST FOR WAIVER

Ohmart/VEGA Corporation of Cincinnati, Ohio and VEGA Grieshaber KG of Schiltach, Germany (hereinafter Ohmart/VEGA) hereby submits this request for waiver of Section 15.205(a), pursuant to Section 1.3 of the Commission's Rules and Regulations.

A. Summary

A Tank Level Probing Radar is a system using a short pulse of RF energy to generate a wide band emission (pulse) or a Frequency Modulated Continuous Wave (FMCW) emission in order to provide highly accurate short range measurement distance typical of material level measurement in tank enclosures. The use of radar signals (electromagnetic waves) for level measurement is state-of-the-art technology. No other measuring method is more universally applicable than radar. The basic advantage of the radar technology is its very accurate non-contact measurement of levels, regardless of temperature and pressure of the product to be measured and of the sensor environment. In comparison to non-contact ultrasonic or laser technology, the radar technology is less sensitive to strong dust generation, temperature variations and air turbulences. Measuring distances up to 100 m can he implemented due to the low damping of the radar signals in the air.

TLPR plays a pivotal role in the economic direction of major mass material storage infrastructure projects. TLPRs provide high accuracy and outstanding reliability, high resistance to dirt and tank atmosphere, regardless of the substance in the tank, its temperature or pressure, allowing precise control of manufacturing processes and storage facilities. The objective of designers and operators of TLPRs is to direct signals from the tank top towards the surface of a substance contained in a closed (not open) metallic tank or reinforced concrete tank, or similar enclosure structure made of comparable attenuating material, such that only extremely low unwanted emissions occur outside the tank. The industries in which TLPRs are used are mostly concerned with process control. TLPRs are used in facilities such as refineries, chemical plants, pharmaceutical plants, pulp and paper mills, food and beverage plants, power plants, etc. **All** of these industries have storage and process tanks throughout their facilities where intermediate or final products are stored or processed and which require level measurement gauges. TLPR provides substance level information to all sectors of the manufacturing and distribution communities having a need for storage of liquids and other products used in any economic sector.

The applications where TLPRs operate, e.g., tanks containing internal structures, etc. demand a relatively high bandwidth to provide sufficient distance resolution between the surface echo and other disturbing echoes and sufficient RF power to achieve appropriate signal-to-noise ratio for reflections. In either case the shielding provided by the tank, the absorption of RF energy by the substance in the tank, and the orientation of the antenna to point in a downward direction will act to contain the RF energy radiated from the TLPR to levels that are well below the limits prescribed in existing EMC standards.

Siemens Milltronics Process Instruments Inc. (Siemens) on November 7,2006 filed a petition for rulemaking to amend Part 15 to establish new rules to permit wideband tank level probing radar (TLPR) for use in closed metal and reinforced concrete material storage tanks in the frequency band 77-81 GHz.[1] Ohmart/VEGA filed comments supporting the Siemens' Petition for Rulemaking? Concurrently with the petition for rulcmaking, Siemens filed a request for waiver of section 15.205(a) to permit the immediate marketing of a Frequency Modulated Continuous Wave (FMCW) TLPR device in the frequency band 78-79 GHz. Ohmart/VEGA supports the immediate marketing of TLPR devices and does not wish to impede or in any way slow down the granting of the Siemens waiver request.

However, Ohmart/VEGA believes that the 1 GHz bandwidth in the Siemens waiver request is unnecessarily restrictive for pulse type TLPR and that a separate waiver should be granted to the permit immediate marketing of pulse TLPR. We will show that a minimum of 4 GHz is needed for desired resolution to permit new applications for pulse and FMCW TLPR. Further, we will show that it is the public interest to grant the waiver for a host of new industrial applications. We will also show that the interference

[1] Sicmens petition for rulemaking and concurrent waiver request placed on Public Notice on December 6, 2006, DZ 06-2475. The rulemaking petition was assigned, ET Docket No. 06-216

[2] Scc Ohmart/Vega comments filed January 5,2007 in response to DA 06-2475.

potential is just as negligible for 4 GHz, as it is for 1 GHz TLPR. We are also willing to place a number of conditions on the waiver to ensure protection of the radio services in the 77 – 81 GHz and adjacent frequency bands. In summary, we believe it is in the public interest to grant the instant waiver request.

B. Ohmart/VEGA

VEGA was established in 1959 with a focus on level measurement. In 1991, VEGA introduced the first viable pulse TLPR to the market. From the 1970's to 1991, only FMCW TLPR instruments were available on the market. Since that time, VEGA has been the leader in the development of pulse TLPR instruments as shown by the following achievements:

1997 First TLPR powered from a 4-20mA process loop

1999 First K-band pulse TLPR for level measurement

1999 Became world leaders in TLPR unit volume – retained since 1999

2003 plics® radar developed, world's smallest TLPR system

2004 First high sensitivity pulse TLPR developed for solids measurements

Ohmart/VEGA was founded in 1950 by Philip Ohmart as the Ohmart Corporation. Philip Ohmart invented process measurement using low level radioactive isotopes. In 1995, Ohmart Corporation partnered with VEGA to distribute VEGA product in North America. After several years of steady growth, VEGA purchased half of the shares of Ohmart Corporation, with Ohmart changing its name to Ohmart/VEGA Corporation. Ohmart/VEGA has been a leader in solving problems for industry and government through our expertise and specialization of the VEGA pulse radar products. Ohmart/VEGA produces TLPR systems at its factory in Cincinnati, Ohio.

VEGA and Ohmart/VEGA have installed of over 100,000 pulse TLPR devices operating below 38 GHz worldwide with approximately 30,000 certified TLPR instruments installed in the United States. The pulse TLPR technology is a very important element of our business and has proven extremely successful in solving the level measurement problems for our customers. The TLPR technology continues to dcvclop with different frequencies showing advantages for various industries and applications.

C. Detailed technical description of TLPR

Microwaves travel at the speed of light, and this speed is essentially constant under a variety of different environmental conditions; this makes microwaves a very robust measuring method which is preferred when high accuracy is required and environmental conditions, such as temperature, pressure, etc., may vary.

Main architectural blocks of a TLPR:

1. The in-tank antenna that functionally emits microwaves into the tank and transmits them downwards to the surface, and receives reflected signals from the surface and leads these back to the electronics. The tank flange seals the tank from the outside environment and prevents microwaves from leaking out of the tank.[3]

2. The electronics generate and receive microwaves on a desired frequency using either FMCW or pulse modulation principle. After receiving the microwaves the analog signal is processed using advanced signal processing to generate a process

[3] The most common antenna to for millimeter wave TLPR is the horn antenna, although other antennas like parabolic, rod or planar antennas can also be used.

parameter or other desirable output. The output is then provided to the user by use of a display or one of several different types of standard communication means.

3. The housing contains and protects the electronics from the environment. It may have explosion proof properties, must be water tight and enable the user to easily install and maintain the TLPR.

Today, TLPRs use either a time of flight or FMCW principle to measure level. For time of flight the TLPR transmits a short pulse (of about 1 nanosecond) into the tank and measures the time it takes for this pulse to travel through the tank and bounce off the surface back to the TLPR. For FMCW the TLPR changes the transmitted frequency at a known change rate, and then compare transmitted frequency to received frequency. The frequency difference is proportional to the distance to the surface. In order to distinguish between the different echoes, and to be able to identify and track the surface, a number of different optimization parameters exist for a user. They include frequency, antenna type and diameter, installation point on the tank, configuration of signal processing parameters, etc. **A** key performance driver is bandwidth both in terms of accuracy and ability to resolve (distinguish between) two echoes that are close together. Therefore, TLPRs exist on several different frequency bands where they need a larger bandwidth than most other microwave devices would use.

The objective of TLPRs is to accurately and reliably measure substance levels contained within a closed metallic tank or reinforced concrete tank, or similar enclosure structure made of comparable attenuating material. The TLPR performs its function by transmitting an electromagnetic signal (either as a pulse or as a continuous frequency modulated wave) towards the surface of the substance in the tank. **A** fraction of this signal is then reflected by the surface in the direction of the TLPR which receives it and processes it in order to provide a distance measurement. Subtracting this distance from the total tank height will give the level of substance in the tank. In all applications, tbc objcctive of the TLPR designer and user is to contain the radiated energy inside the tank.

TLPR manufacturers must be able to provide users with many different options or variants of the TLPR because the tanks, tank environment, and properties of the substance stored in the tank vary a lot, and can be combined into an infinite number of potential applications. Each application will provide a unique microwave challenge to the TLPR that must be solved by selecting the right type of TLPR with the right options, and configuring it appropriately. **A** number of key parameters of the TLPR can be varied to provide robust measurements for most existing conditions. The most important parameters include transmitted frequency, antenna type, antenna size, antenna design, signal processing configuration, and bandwidth.

The first TLPRs were developed around 10 GHz since this had been established as the optimum frequency for use in large storage tanks combining robustness to condensation and contamination with a reasonable antenna beam. **A** narrow antenna beam is desirable in the storage tanks with large measuring distances (up to 50m) to avoid interference from structures, walls etc, that exist inside the tank. Later developments (during the 1990s) produced TLPRs first at 6 GHz and later 26 GHz. This development was primarily driven by applications in the process industry where the tanks are typically shorter, but the conditions (structures, foaming, contamination, etc) inside the tanks more extreme than in the large storage tanks – thus requiring a slightly different optimization of the TLPR. For future developments, it is predicted that higher frequencies hctwccn 57 GHz to 64 GHz or 75 GHz to 85 GHz will he employed. There are several advantages of higher frequcncics. The same antenna produces a narrower antenna beam and a higher gain compared to lower frequencies. Using the same relative bandwidth (bandwidth/center frequency) also at higher frequencies will increase the resolution. This will contribute to accuracy and ability to resolve echoes in the tank. Additionally, there is the potential to reuse low cost components from other applications.

Inevitably there may be some low level leakage of the signal into the air outside the tank due to discontinuities at nozzle openings, seals and, in some cases, necessary vent arrangements for the tank. Measurements show that the leakage emissions outside the tank are at least 5 dB to 10 dB below the maximum permitted levels specified in the relevant EMC standards. The TLPR community has sought to ensure that systems do not cause any interference to existing radio services. Over the last three decades there have been no reports or complaints about interference between TLPRs and other radio services.

As already mentioned, TLPRs operate by radiating short radar pulses or radiating a FMCW modulated signal into the tank. When a radar signal reaches the substance with a different dielectric constant, a small portion of the signal is reflected to the receiver and the remaining signal is scattered and basically absorbed by the substance in the tank. An ideal case would he just one echo reflected to the receiver, i.e. having only the signal rcflccted from the substance surface. In this case there would not be a need for a large handwidth. However, the receiver takes up many other undesired disturbance echoes besides the desired surface echo. This decreases the measurement performance. The disturbing echoes originate from reflection of the signal from other obstacles in the tank.

The tank's shape, size and content varies considerably. Furthermore, TLPRs are often installed in existing tanks where nozzles and openings are placed near the tank wall. When installed on such tanks, the signal emitted from the TLPRs is being reflcctcd from the tank wall, once again causing thc disturbing echoes.

In order to distinguish the surface echo from disturbing echoes caused by the tank structure a bandwidth as high as possible is required. The radar resolution in terms of a distancc is closely related to the bandwidth. TLPR is currently produced in nominal frequencies of 6.3 GHz, 10 GHz and 26 GHz. TLPR has proved highly beneficial in a broad variety of industries and applications. Industries that have moved to TLPR as their predominant level instrument include: chemical, petrochemical, pharmaceutical, beverage, wet corn milling, paints and coatings, wood pulp processing, and many others. From a government perspective, TLPR is also now the predominant method of level measurement for both propulsion and jet fuel on many classes of Navy ships, and is also employed as the method of level measurement of the new classes of Army fuel tankers.

Limitations of TLPR at Current Frequencies: At the current frequencies available for TLPR, the main limitations on the devices are:

1. The antenna system at these frequencies is too large for a large segment of applications. With the current relatively long wavelength of the microwaves, the smallest practical antenna system has a diameter of 1-1/2". This 1-1/2" diameter antcnna is very limited in its range of measurement, so is only practical for a small set of applications.
2. Just beyond the antenna system of any radar instrument is an area of high electromagnetic noise called the "near zone", "dead zone", or "blocking distance".

Depending on the reflective properties of the product being measured, this unmeasured area can be a few inches to several feet. This severely limits the use of TLPR for applications where the tank is filled all the way to the top

3. With the relatively low (microwave) frequency, the angle of transmission of the microwave energy can be relatively large. This can present difficulties when there are obstructions or in very narrow tanks, as these obstructions or tank walls interfere with the microwave signal and the accuracy of the instrument

D. Waiver request

Ohmart/VEGA seeks with this waiver request to certify limited numbers TLPR devices under Section 15.209 of the FCC Rules, which allows operation of intentional radiator without an individual license on almost any frequency subject to certain radiated emission limits. To accomplish this, we request waiver of Section 15.205[4], which: (1) restrict spurious emission in certain restricted bands to the 15.209 limits; and (2) prohibits the fundamental frequency of the device in a restricted band. Specifically, we request relaxation of the requirement that precludes the fundamental of an intentional radiator in a restricted band. Under the terms of the waiver, we propose that TLPR (both pulse and FMCW) would be subject to all other technical and administrative requirements in Part 15 as well as the following additional technical requirements to ensure protection of radio services in the 77-81 GHz and adjacent radio frequency bands.

[4] Section 15.205 lists 68 frequency bands as restricted, including a blanket restriction on all frequencies above 38.6 GHz. Most of the frequencies in the restricted hands are intended to protect safety and navigational radio services. The blanket restriction on frequencies above 38.6 GHz was to protect certain satellite downlinks below 40 GHz and to provide initial protection for various services above 40 GHz. At the time the higher hand restriction was adopted in 1989 (Report and Order in Gen Docket 87-389, 4 FCC Rcd 3493 (1989)), there **was** no known demand for Part 15 devices above 40 GHz, and avoided the necessity to identify numerous allocations and services above **40** GHz. The logic in the initial decision to designate the entire spectrum above 40 GHz as a restricted band is no longer applicable. The FCC has since exempted several devices from this restriction, as shown in Section 15.205(d)(4, 8 & 9) and 15.205(e).

Proposed technical requirements for TLPR under terms of waiver:

1.	Frequency band	77-81 GHz
2.	Maximum radiated bandwidth	- 10 dBc at hand edge
3.	Maximum antenna conducted input power	+10 dBm
4.	Maximum Peak power inside tank (EIRP)	+43 dBm
5.	Maximum average power inside tank	+23 dBm
6.	Peak spurious EIRP from bench test	-20 dBc
7.	Maximum radiated emission @ 3 m outside tank	-41.3 dBm/MHz
8.	Maximum duty cycle (for pulse TLPR)	0.1% to 1%

The above radiated emission outside the tank are the same levels currently specified in 47 CFR 15.209(a) for spurious emissions from any source in the frequency range of 40 -250 MHz.[5] Testing for compliance with this requirement will be measured on a test site, or if necessary, in-situ on three typical tanks to ensure compliance. These measurements will he made on each type of tank to he fitted with the TLPR to ensure compliance with maximum radiated limit outside the tank. With adherence to the ahovc technical requirements, protection of the co-channel, as well as other spectrum users in harmonically related frequency bands is assured!

The above technical requirements require bench testing of the TLPR to determine if the basic parameters of maximum power level, out-of hand emissions, spurious emissions and bandwidth are met. Further, radiated emission testing would he required to show that the fundamental levels outside the tank are below - 41.3 dBm/MHz. Since out-of-band and spurious emissions must he bench tested to emission levels – 10dBc and

[5] The radiated emission limit in 15.209(a) is 500 μV/m at 3 meters is equivalent to - 41.3 dBm/MHz.

[6] It should also be noted that the above requirements, with the exception of the frequency, are the same as technical requirements as is proposed in Europe for the TLPR in the frequency range (75-85 GHz).

-20 dBc, respectively and in-band levels must be measured on a test site, or if necessary in-situ to meet -41 dBm/MHz level, compliance over the frequency range of 40-250 GHz is assured without the need for specific radiated emission measurements of such low levels at the harmonic frequencies. If in-situ measurements are required, it is proposed that a minimum of three actual installations of the same type would be measured and the data provided as part of the test report for filing with the Commission, as part of the certification required for all intentional radiators, pursuant to 47 CFR 15.201.

Justification for 4 GHz for TLPR: The reason that 77-81 GHz frequency band is requested, in lieu of the 78-79 GHz band requested by Siemens in its waiver, is due to the need for better resolution and hence the accuracy of TLPR. Resolution of echos is directly related to the bandwidth of the emission. We have no information about the Siemens equipment and therefore can only speculate what type system will be marketed under the terms the Siemens waiver. With a 1 GHz bandwidth, the usefulness of going to the higher frequency is essentially limited to a smaller size TLPR. This probably means that Siemens needs a smaller antenna and TLPR for a specific application. However, Ohmart/VEGA requests a 4 GHz bandwidth to permit better resolutions and hence a wider range of applications under the terms of the waiver. The better resolution will permit immediate marketing of this new technology in the biotechnology, semiconductor and alcoholic beverage industries for the reasons mentioned below.

Another point for consideration is that there is a technical limitation of relative bandwidth of 8-10%. Relative bandwidth is the bandwidth of the emission divided by the frequency. Exceeding this value produces multimode paths that result in undefined measurements; e.g., multiple signals, loss of accuracy, loss of resolution and false signal reflections. At microwave frequencies (6.3 GHz, 10 GHz and 26 GHz), the bandwidth is therefore limited to 2 GHz. At higher frequencies additional bandwidth can he utilized without exceeding the 8-10% limit. This would improve reliability and performance of the TLPR and open new fields of applications. This is valid for both pulse and FMCW TLPR; otherwise the higher frequency is of limited benefit. As already mentioned, without the additional bandwidth, the only remaining benefit is the smaller antenna size. But the fact remains that to achieve the necessary accuracy for the above mentioned applications, a frequency band of at least 4 GHz (77-81 GHz) is necessary.

Additional waiver conditions: To further protect the radio spectrum until new FCC Rules are adopted for TLPR, Ohmart/VEGA proposes four waiver conditions, in addition to the above mentioned technical requirements. First, we offer to maintain a database of installations to help identify and locate TLPR installations in the 77-81 GHz frequency hand and to resolve interference complaints should in the unlikely event of interference actually occurs. We will share this information with the Commission and NTIA. Second, the waiver can he restricted TLPRs to metal or concrete reinforced containers or similar enclosure structure made of comparable attenuating material to help ensure minimum leakage from the container. What is important here is the attenuation provided by the enclosure. Third, in addition to bench measurements to ensure that the device meets the limits recommended the proposed rulemaking in FCC ET docket 06-216, millimeter wave TLPRs will he measured on a test site, or if necessary, in-situ at 3 locations to ensure compliance with the limit of - 41.3 dBm/MHz at 3 meters is met. These measurements will be made on each type of tank to he fitted with the TLPR to ensure compliance with maximum radiated limit outside the tank. Fourth, we will limit installations to 250 units during the first year of the waiver and 500 TLPRs for the second year of the waiver.

In granting the waiver with the aforementioned conditions, we believe this will provide an opportunity for the accrual of data to support the rulemaking for millimeter wave TLPR devices.

E. Protection of the radio spectrum

Radio Spectrum allocations: According to Section 2.106 of the Commission's Rules, the radio spectrum in the frequency band 77.0 - 81.0 GHz is currently allocated to:

Radio Service	Freauency Band	Allocation Notes
Radio Astronomy	76 – 86 GHz	5.149, US 342
Space Research (space research)	76 – 81 GHz	5.560
Amateur, Amateur Satellite	76 – 81 GHz	
Radiolocation	77 – 77.5 GHz	
Radiolocation	79 – 81 GHz	

According to allocation notes 5.149 and US 342, administrations shall take all practical steps to protect the radio astronomy service from harmful interference. The notes list 45 frequencies bands, including the band 76-86 GHz, which as noted in the table is not used for special line observations. The notes do not imply that this band is exclusively limited to radio astronomy observations. We believe the Ohmart/VEGA waiver conditions are reasonable practical steps, as explained herein, to protect the radio astronomy service, as well as the other radio services.

Allocation note 5.560 states that is the band 78 – 79 GHz radars located on space stations may be operated on a primary basis in the earth exploration-satellite service and in space research service. It is therefore reasonable to assume that TLPR will not cause interfere with space station radar systems for obvious reasons. For the remaining radio services listed above, there are no licensees listed in the Universal License System of the Wireless Bureau in the frequency range of **77** GHz to 81 GHz. Furthermore, there arc *no* grants of authorization from equipment to operate in this band. Missing from this search is the radio amateur service and possible government radio services in these bands due to the fact that there is very little published information about the activities of these services. Nevertheless, we believe there are sufficient safeguardsiconditions to protect these services, as noted below.

Interference analyses: Interference from TLPR to radio services in these bands is not expected because TLPRs are installed in closed (not open) metallic tanks or reinforced concrete tanks, or similar enclosure structures made of comparable attenuating material. The numbers of TLPR units will not proliferate to the point where aggregation could affect any of the primary services in the band and, based on the proposal, any detectable emissions outside the tank enclosure must meet the proposed waiver limit. TLPR operate in commercial and industrial areas far away from other users of the spectrum. Furthermore, installation of the antenna inside the tanks pointing downwards mitigates any external emissions from interfering with other users of the spectrum. **All** these factors make the probability of interference from TLPR negligible.

As previously mentioned, the radiated emissions from each type of tank in which the TLPR is installed must be less than 500 μV/m at **3** m (- 41 dBm/MHz). The way the TLPR is actually tested is referred to as "worst-case measurements" in that the tester must examine around the tank and every aperture (opening and seal) looking for radiated emissions. Emissions, if any, will be typically he found around openings or seals located around the tank hosting the TLPR. At these frequencies, the emissions are very directional with a narrow heamwidth and the measurements are timc-consuming and not easy to perform. This requires the tester to look for emissions around cach opening, raising and lowering the measurement antenna looking for the maximum or "worst case" emission. Once an emission is detected, the tester must point the antenna in the direction of the source and record the highest lcvel emission. In other words, you may have a few very narrow bcam low level emissions emanating from the tank in somc obscure direction that may approach the radiated limit of - 41 dBm/MHz. Considering the fact that the emissions attenuate at a rate that is inversely proportional to the distance, any one emission will be less than **5** μV/m at 300 m (about - 81.3 dBm/MHz), which is well below the noise level of most receivers at these frequencies.

It should also be noted that vehicle radars operating in the hand 76-77 GHz under 47 CFR 15.253 is permitted a maximum of 60 μW/cm^2 at **3** meters, which is equivalent to 1.4 V/m at *3* meters. Spurious emissions outside the 76-77 GHz hand are limited to 600 pW/cm^2 at **3** meters, which equivalent to 140 mV/cm^2 at **3** meters. Both are very high levels compared to devices operating under 15.209 of the Rules. The spurious emission level for vehicle radar in the forward direction is about 280 times the proposed tank seepage radiation limit of 500 μV/m at **3** m. The implication is that if Radio Astronomy and the other radio services can tolerate the emissions from vehicle radar devices; therc should he no problem with the extremely low level of seepage emissions from tanks with TLPR.

All these factors (distance separation, low level emission, directivity of emission, location, number of units actually installed, ctc.) all point to an extremely low level of probability of harmful interference from TLPR. These factors again illustrate the negligible probability of interference from TLPR operating under the terms of this waiver.

F. Public interest

Industries affected by the new technology: Ohmart/VEGA believes that a grant of the waiver benefits the public by allowing the application of new technology to an important part of U.S. industry. A higher frequency TLPR device would significantly reduce or eliminate the limitations listed above under the technical description of TLPR. Specifically, the antennas will he smaller allowing for new applications and the measurements will be more accurate with increased resolution due to increased bandwidth. An increase in resolution will allow for more distinction between the useful echo and false signals. This translates into safer and more reliable measurements for users. Below are just a small sample of industries and applications where we have discussed specific application needs which could he filled by higher frequency TLPR. Once the instruments are available, we are certain that a large number of other highly beneficial applications will be developed.

1. *Biotechnology:* In the biotechnology industry, many processing tanks are used which are very small compared to those used in traditional pharmaceuticals. Many processing tanks are between 18" and 48" tall, with diameters of 12" to 30'. Pulse TLPR would bring great benefits due to its high reliability, top mounting, and non-contact nature. Non-contact technology allows the users to maintain an aseptic

environment in a more efficient, less costly fashion. At the current, lower frequencies, the size of the antenna systems and the near zone precludes their use in these vessels.

2. *Semiconductor:* Semiconductor fabrication systems, known as "fahs", are fed with very precise mixtures of high purity chemicals to perform the etching, cleaning, and other processes on the wafers. The tanks containing these chemicals can be as small as 8" high and 6" in diameter. The current method is to infer the level of the tank by weight. Due to slight differences in the weight of these vessels, a proper tare weight is often impractical, resulting in dissatisfaction with the current methods and a desire to use pulse TLPR.

3. *Alcoholic **Beverages:*** Taxes are levied on alcoholic beverages by percentage of alcohol. Very tall and narrow tanks are used to measure the volume of liquid and then the percentage of alcohol is also measured. The combination of these two measurements determines the taxes paid. With the current lower frequency pulse TLPRs, the interference from the side walls causes inaccuracies in the measurement. The alcoholic beverage producers see great benefit to using a top mounted, non-contact solution, and would welcome a pulse TLPR for this application.

Adoption of the waiver request will bring the benefits of millimeter wave technology to a host of new processing industries and applications, some of which are still being developed. One additional substantial benefit to industry is the cost savings of using existing vessel (tank) apertures to mount the smaller size millimeter wave TLPR. Microwave (low frequencies) TLPRs require larger apertures (openings), which cannot be used on existing tanks without a lot of extra costs. In other words, there would be a lot of existing tanks and applications that would immediately benefit with the waiver. The granting of the waiver is at minimum or no risk of interference to existing radio services, particularly with all the conditions placed on the waiver. Considering the fact that the Commission tries to encourage the use of new technology through the use of waiver and that there is a direct public benefit to the manufacturing and processing industry, Ohmart/VEGA urges the Commission to grant the instant waiver request.

The Commission assesses waiver requests according to the principles established in the WAIT Radio v. FCC. In that case, as here, the applicant sought to operate in contravention of the rules while explaining how it would accomplish the purpose of the rules by other means. The Court required the Commission consider that a waiver is appropriate where the applicant maintains the public interest in the underlying rule. OhmartNEGA maintains that the public interest is served here with the immediate introduction of millimeter wave technology to new applications in the processing industry and by the fact that protection of the current radio users of the radio spectrum is reasonably assured.

While the TLPR rulemaking will settle issues of whether a larger bandwidth should be allowed for TLPR, as recently recommended in Europe by ETSI and other European organizations: Ohmart/VEGA believes that there is minimum interference

'The European Telecommunications Standards Institute recently adopted in ETSI EN 302 372 a standard that allows the operation of TLPR without *an* individual license over a number of frequencies bands: 4.5-7 GHz, 8.5-10.6 GHz, 24.05-27 GHz, 57-64 GHz and 75-85 GHz. Krohne America, Inc. in its comments to the Siemens Petition for Rulemaking, ET Docket 06-216, asked the Commission to consider the entire frequency hand 75-85 GHz instead of just 77-81 GHz to harmonize with the proposed European Standard for TLPR.

potential and that it is in the public interest to the grant the waiver to permit immediate marketing of TLPR, for the reasons given above

G. Conclusion

Granting of the waiver of 15.205(a) will permit Ohmart/VEGA to immediately certify and market millimeter wave TLPR that will cover new important applications, such as those in biotechnology, semi-conductor and beverage industry. In the interest of public safety with no realistic possibility of harm to existing users of the spectrum, we **ask** the Commission to grant the waiver promptly

Respectively submitted,

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